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### **Unusual behaviors in heavy Fermion semimetal $\text{CeRu}_4\text{Sb}_{12}$**

Keisuke Abe, Takahiro Namiki, Tatsuma D. Matsuda, Takahiro Namiki, Hitoshi  
Sugawara, Yuji Aoki, Hideyuki Sato

*Dept. of Physics, Tokyo Metropolitan University, Minami-Ohsawa 1-1, Hachioji-shi, Tokyo  
192-0397, Japan*

The filled-skutterudite compounds ( $\text{RETr}_4\text{Pn}_{12}$ : RE= rare earth, Tr= Fe, Ru, Os, and P= pnictogen) have attracted much attention from the viewpoints of both the novel physical properties and their potential as thermoelectric materials for next generation.  $\text{CeRu}_4\text{Sb}_{12}$  is a unique system exhibiting metallic conductivity in contrast with the other Ce-skutterudites which show semi-conducting behaviors predicted from the band structure calculation. Experimentally, non-Fermi-liquid (NFL) behavior has been reported in the electrical resistivity below a few Kelvin, though no clear explanation has been made.

We report extensive transport and magnetic studies on high quality  $\text{RERu}_4\text{Sb}_{12}$  single crystals for RE=La, Ce, Pr and Nd. For  $\text{CeRu}_4\text{Sb}_{12}$ , we have succeeded in observing Shubnikov-de Haas oscillations both in the magnetoresistance and Hall effect. Small semi-metallic Fermi surface (FS) has been inferred in contrast with the large FS for RE= La and Pr, suggesting a large  $c - f$  hybridization. The largely enhanced effective mass, more than 5 times the rest electron mass for such small FS, also suggests highly correlated electrons. At low temperatures below 3 K, both the thermoelectric power and Hall effect exhibit sharp anomalies correlated with the NFL. Those anomalies are suppressed by the magnetic field, reflecting magnetic origin.